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<120> Polymorphisms in the human CYP3A4 and CYP3A7 genes and
their use in diagnostic and therapeutic applications

<130> D 2145 PCT

<140> US 10/070,587

<141> 2002-03-08

<150> EP 99 11 8120.7

<151> 1999-09-10

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 <222> (169)..(249)
 <223>

<220>
 <221> CDS
 <222> (116)..(166)
 <223>

<400> 128
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 cagggttaag tacattaaaa ataataatca aatattatct tgtttctcct cccag grc 118
 Xaa
 1
 ttt tgt atg ttt gac atg gaa tgt cat aaa aag tat gga aaa gtg tgg 166
 Phe Cys Met Phe Asp Met Glu Cys His Lys Lys Tyr Gly Lys Val Trp
 5 10 15
 gggtgagtat tctggaaact tccattggat agacttggtt ctatgatgag tttaccccac 226
 tgcacagagg acagtctcag ccc 249

<210> 129
 <211> 17
 <212> PRT
 <213> Homo sapiens

<220>

<221> MISC_FEATURE

<222> (1)..(1)

<223> Xaa is Gly or Asp

<400> 129

Xaa	Phe	Cys	Met	Phe	Asp	Met	Glu	Cys	His	Lys	Lys	Tyr	Gly	Lys	Val
1				5					10					15	

Trp

<210> 130

<211> 293

<212> DNA

<213> Homo sapiens

<220>

<221> intron

<222> (1)..(77)

<223>

<220>

<221> exon

<222> (78)..(177)

<223>

<220>

<221> intron

<222> (178)..(293)

<223>

<220>

<221> CDS

<222> (79)..(177)

<223>

<400> 130

agtctggcctt cctggggttg gctccagctg tagaataagg ctgttgatgt ttaatcaact 60

ctgtttttttt	cacacagc	ttt	tat	gat	ggg	caa	cag	cct	gtg	ctg	gct	atc	111
		Phe	Tyr	Asp	Gly	Gln	Gln	Pro	Val	Leu	Ala	Ile	
		1				5					10		

aca	gat	cct	gac	atg	atc	aaa	aca	gtg	cta	gtg	aaa	gaa	tgt	tat	tct	159
Thr	Asp	Pro	Asp	Met	Ile	Lys	Thr	Val	Leu	Val	Lys	Glu	Cys	Tyr	Ser	
		15				20					25					

gtc	ttc	aca	aac	cgg	agg	gtaagcattc	atgtgttgaa	attaaaatac	207
Val	Phe	Thr	Asn	Arg	Arg				
		30							

tgattgatta aatttatatt ttgaaattct tatatattca tagacagttg cctaaaaaat 267

gtccaggaag gttccacgtc cacttc 293

<210> 131

<211> 33
 <212> PRT
 <213> Homo sapiens

<400> 131
 Phe Tyr Asp Gly Gln Gln Pro Val Leu Ala Ile Thr Asp Pro Asp Met
 1 5 10 15
 Ile Lys Thr Val Leu Val Lys Glu Cys Tyr Ser Val Phe Thr Asn Arg
 20 25 30

Arg

<210> 132
 <211> 236
 <212> DNA
 <213> Homo sapiens

<220>
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 <223>

<220>
 <221> exon
 <222> (62)..(175)
 <223>

<220>
 <221> intron
 <222> (176)..(236)
 <223>

<220>
 <221> CDS
 <222> (62)..(175)
 <223>

<400> 132
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 g cct ttt ggt cca gtg gga ttt atg aaa agt gcc atc tct ata gct gag 109
 Pro Phe Gly Pro Val Gly Phe Met Lys Ser Ala Ile Ser Ile Ala Glu
 1 5 10 15
 gat gaa gaa tgg aag aga tta cga tca ttg ctg tct cca acc ttc acc 157
 Asp Glu Glu Trp Lys Arg Leu Arg Ser Leu Leu Ser Pro Thr Phe Thr
 20 25 30
 agt gga aaa ctc aag gag gtatgaaaat aacatgagtt ttaataagaa 205
 Ser Gly Lys Leu Lys Glu
 35
 acttaaagaa tgaatctggt ggggacaggt a 236

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<210> 133
<211> 38
<212> PRT
<213> Homo sapiens
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<400> 133
Pro Phe Gly Pro Val Gly Phe Met Lys Ser Ala Ile Ser Ile Ala Glu
  1             5             10             15
Asp Glu Glu Trp Lys Arg Leu Arg Ser Leu Leu Ser Pro Thr Phe Thr
      20             25             30
Ser Gly Lys Leu Lys Glu
      35

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<210> 134
<211> 393
<212> DNA
<213> Homo sapiens
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<220>
<221> intron
<222> (1) .. (98)
<223>
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<220>
<221> exon
<222> (99) .. (247)
<223>
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<221> intron
<222> (248)..(393)
<223>
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<220>  
<221> CDS  
<222> (100) .. (246)  
<223>
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<400> 134
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ggtgctgatt ttaattttcc acatctttct ccactcagc gtc ttt ggg gcc tac 114
Val Phe Gly Ala Tyr
1 5

agc atg gat gtg atc act agc aca tca ttt gga gtg aac atc gac tct 162
Ser Met Asp Val Ile Thr Ser Thr Ser Phe Gly Val Asn Ile Asp Ser
10 15 20

ctc aac aat cca caa gac ccc ttt gtg gaa aac acc aag aag ctt tta 210
Leu Asn Asn Pro Gln Asp Pro Phe Val Glu Asn Thr Lys Lys Leu Leu
25 30 35

aga ttt gat ttt ttg gat cca ttc ttt ctc tca ata agtatgtgga 256
Arg Phe Asp Phe Leu Asp Pro Phe Phe Leu Ser Ile

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40

45

ctactatttc cttttattta tcttkctctc ttaaaaataa ctgctttatt gagatataaa 316

tcaccatgta attcatccac ttaaaatata cagttcagtg atttgtagta catttgaaga 376

tatgtgtgac catcatc 393

<210> 135

<211> 49

<212> PRT

<213> Homo sapiens

<400> 135

Val Phe Gly Ala Tyr Ser Met Asp Val Ile Thr Ser Thr Ser Phe Gly
1 5 10 15

Val Asn Ile Asp Ser Leu Asn Asn Pro Gln Asp Pro Phe Val Glu Asn
20 25 30

Thr Lys Lys Leu Leu Arg Phe Asp Phe Leu Asp Pro Phe Phe Leu Ser
35 40 45

Ile

<210> 136

<211> 240

<212> DNA

<213> Homo sapiens

<220>

<221> intron

<222> (1)..(82)

<223>

<220>

<221> exon

<222> (83)..(149)

<223>

<220>

<221> intron

<222> (150)..(240)

<223>

<220>

<221> CDS

<222> (83)..(148)

<223>

<400> 136

ggagatcaag gaccacgctt gtgatttact tctgacttca ggagccactt tctgtcagtg 60

aaatttctct ttttgcttct ag cac cga gtg gat ttc ctt cag ctg atg att 112
His Arg Val Asp Phe Leu Gln Leu Met Ile

1 5 10
gac tct cag aat tca aaa gaa act gag tcc cac aaa ggtaaccaga 158
Asp Ser Gln Asn Ser Lys Glu Thr Glu Ser His Lys
15 20

gtgtttctga gggctacttg tggggcactc agaggggaagg ccttggtctg aaaatgtgca 218
ggaagtattc caggatgatg ag 240

<210> 137
<211> 22
<212> PRT
<213> Homo sapiens

<400> 137
His Arg Val Asp Phe Leu Gln Leu Met Ile Asp Ser Gln Asn Ser Lys
1 5 10 15
Glu Thr Glu Ser His Lys
20

<210> 138
<211> 399
<212> DNA
<213> Homo sapiens

<220>
<221> intron
<222> (1)..(111)
<223>

<220>
<221> exon
<222> (112)..(338)
<223>

<220>
<221> intron
<222> (339)..(399)
<223>

<220>
<221> CDS
<222> (112)..(336)
<223>

<400> 138
ccagtatgag ttgttctctg gaacttctaa cagttcaaca gtactacatg gactgagtta 60
aaagttaatt caaaaatctc aatttatcca aatctgtttc tttcttttca g gca cca 117
Ala Pro
1

ccc acc tat gat act gtg cta cag atg gag tat ctt gac atg gtg gtg 165
Pro Thr Tyr Asp Thr Val Leu Gln Met Glu Tyr Leu Asp Met Val Val

	5	10	15	
aat gaa acg ctc aga tta ttc cca att gct atg aga ctt gag agg gtc				213
Asn Glu Thr Leu Arg Leu Phe Pro Ile Ala Met Arg Leu Glu Arg Val				
	20	25	30	
tgc aaa aaa gat gtt gag atc aat ggg atg ttc att ccc aaa ggg tgg				261
Cys Lys Lys Asp Val Glu Ile Asn Gly Met Phe Ile Pro Lys Gly Trp				
	35	40	45	50
gtg gtg atg att cca agc tat gct ctt cac cgt gac cca aag tac tgg				309
Val Val Met Ile Pro Ser Tyr Ala Leu His Arg Asp Pro Lys Tyr Trp				
	55	60	65	
asa gag cct gag aag ttc ctc cct gaa aggtaggagg cccctgggaa				356
Xaa Glu Pro Glu Lys Phe Leu Pro Glu				
	70	75		
gggagccctc cctgaaccag cctggttcaa gcatattctg cct				399

<210> 139

<211> 75

<212> PRT

<213> Homo sapiens

<220>

<221> MISC_FEATURE

<222> (67)..(67)

<223> Xaa is Thr or Arg

<400> 139

Ala Pro Pro Thr Tyr Asp Thr Val Leu Gln Met Glu Tyr Leu Asp Met
1 5 10 15

Val Val Asn Glu Thr Leu Arg Leu Phe Pro Ile Ala Met Arg Leu Glu
20 25 30

Arg Val Cys Lys Lys Asp Val Glu Ile Asn Gly Met Phe Ile Pro Lys
35 40 45

Gly Trp Val Val Met Ile Pro Ser Tyr Ala Leu His Arg Asp Pro Lys
50 55 60

Tyr Trp Xaa Glu Pro Glu Lys Phe Leu Pro Glu
65 70 75

<210> 140

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Sequence

<400> 140
 ccagtatgag ttgttctctg g 21

<210> 141
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Sequence

<400> 141
 aggcagaata tgcttgaacc aggc 24

<210> 142
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Sequence

<400> 142
 gaagtggacg tggaaccttc ctggac 26

<210> 143
 <211> 304
 <212> DNA
 <213> Homo sapiens

<400> 143
 agtctggcct cctgggttgg gctccagctg tagaataagg ctggtgatgt ttaatcaact 60
 ctgttttttt cacacagctt ttatgatggt caacagcctg tgctggctat cacagatcct 120
 gacatgatca aaacagtgct agtgaaagaa tgttattctg tcttcacaaa ccggagggtta 180
 agcattcatg tggtgaaatt aaaatactga ttgattaaat ttatattttg aaattcttat 240
 atattcatag acagttgcct aaaaaatgtc caggaagggt ccacgtccac ttcattcctgt 300
 cccc 304

<210> 144
 <211> 236
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (62)..(175)

<220>
 <221> intron
 <222> (1)..(61)

<220>
 <221> intron
 <222> (176)..(236)

<220>
 <221> exon
 <222> (62)..(175)

<400> 144
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 g cct ttt ggt cca gtg gga ttt atg aaa agt gcc atc tct ata gct gag 109
 Pro Phe Gly Pro Val Gly Phe Met Lys Ser Ala Ile Ser Ile Ala Glu
 1 5 10 15
 gat gaa gaa tgg aag aga tta caa tca ttg ctg tct cca acc ttc acc 157
 Asp Glu Glu Trp Lys Arg Leu Gln Ser Leu Leu Ser Pro Thr Phe Thr
 20 25 30
 agt gga aaa ctc aag gag gtatgaaaat aacatgagtt ttaataagaa 205
 Ser Gly Lys Leu Lys Glu
 35
 acttaaagaa tgaatctggt ggggacaggt a 236

<210> 145
 <211> 38
 <212> PRT
 <213> Homo.sapiens

<400> 145
 Pro Phe Gly Pro Val Gly Phe Met Lys Ser Ala Ile Ser Ile Ala Glu
 1 5 10 15
 Asp Glu Glu Trp Lys Arg Leu Gln Ser Leu Leu Ser Pro Thr Phe Thr
 20 25 30
 Ser Gly Lys Leu Lys Glu
 35

<210> 146
 <211> 379
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (188)..(274)

<400> 146
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gtacagaaaa cacatcacia aattcattat aaaatgtcac ttactgctcc atgctgggga 120
aagccatgtc cttctgggac tagagtctgc acatttaact atgggtggtg ttgtgttttg 180
tgcttag atg gtc cct atc att gcc cag tat gga gat gtg ttg gtg aga 229
Met Val Pro Ile Ile Ala Gln Tyr Gly Asp Val Leu Val Arg
1 5 10
aat ctg agg cgg gaa gca gag aca ggc aag cct atc acc ttg aaa 274
Asn Leu Arg Arg Glu Ala Glu Thr Gly Lys Pro Ile Thr Leu Lys
15 20 25
gagtaagtag aagcgcagcc atggggttct gagctgtcat gaaccctcc agctgcctgc 334
catggagctg atattcctgc tgttgggtta ttccagtgc cagac 379

<210> 147
<211> 29
<212> PRT
<213> Homo sapiens

<400> 147
Met Val Pro Ile Ile Ala Gln Tyr Gly Asp Val Leu Val Arg Asn Leu
1 5 10 15
Arg Arg Glu Ala Glu Thr Gly Lys Pro Ile Thr Leu Lys
20 25

<210> 148
<211> 379
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (188)..(274)

<400> 148
ccctttccaa ggggtagtcc actgaatttg agctgcctaa aaatgggtctt ttatctttat 60
gtacagaaaa cacatcacia aattcattat aaaatgtcac ttactgctcc atgctgggga 120
aagccatgtc cttctgggac tagagtctgc acatttaact atgggtggtg ttgtgttttg 180
tgcttag atg gtc cct atc att gcc cag tat gga gat gtg ttg gtg aga 229
Met Val Pro Ile Ile Ala Gln Tyr Gly Asp Val Leu Val Arg
1 5 10
aat ctg agg cgg gaa gca gag aca ggc aag cct gtc acc ttg aaa 274
Asn Leu Arg Arg Glu Ala Glu Thr Gly Lys Pro Val Thr Leu Lys
15 20 25
cagtaagtag aagcgcagcc atggggttct gagctgtcat gaaccctcc agctgcctgc 334
catggagctg atattcctgc tgttgggtta ttccagtgc cagac 379

<210> 149
 <211> 29
 <212> PRT
 <213> Homo sapiens

<400> 149
 Met Val Pro Ile Ile Ala Gln Tyr Gly Asp Val Leu Val Arg Asn Leu
 1 5 10 15
 Arg Arg Glu Ala Glu Thr Gly Lys Pro Val Thr Leu Lys
 20 25

<210> 150
 <211> 379
 <212> DNA
 <213> Homo sapiens

<400> 150
 ccctttccaa ggggtagtcc actgaatttg agctgcctaa aaatgggtcctt ttatcttttat 60
 gtacagaaaa cacatcacaa aattcattat aaaatgtcac ttactgctcc atgctgggga 120
 aagccatgtc cttctgggac tagagtctgc acatttaact atgggtgggtg ttgtgttttg 180
 tgcttagatg gtccttatca ttgccagta tggagatgtg ttggtgagaa atctgaggcg 240
 ggaagcagag acaggcaagc ctgtcacctt gaaagagtaa gtagaagcgc agctatgggg 300
 ttctgagctg tcatgaaccc ctccagctgc ctgccatgga gctgatattc ctgctgttgg 360
 gttattccag tgaccagac 379

<210> 151
 <211> 379
 <212> DNA
 <213> Homo sapiens

<400> 151
 ccctttccaa ggggtagtcc actgaatttg agctgcctaa aaatgggtcctt ttatcttttat 60
 gtacagaaaa cacatcacaa aattcattat aaaatgtcac ttactgctcc atgctgggga 120
 aagccatgtc cttctgggac tagagtctgc acatttaact atgggtgggtg ttgtgttttg 180
 tgcttagatg gtccttatca ttgccagta tggagatgtg ttggtgagaa atctgaggcg 240
 ggaagcagag acaggcaagc ctgtcacctt gaaagagtaa gtagaagcgc agccatgggt 300
 ttctgagctg tcatgaaccc ctccagctgc ctgccatgga gctgatattc ctgctgttgg 360
 gttattccag tgaccagac 379

<210> 152
 <211> 379
 <212> DNA
 <213> Homo sapiens

<400> 152
 ccctttccaa ggggtagtcc actgaatttg agctgcctaa aaatgggtcctt ttatcttttat 60
 gtacagaaaa cacatcacaa aattcattat aaaatgtcac ttactgctcc atgctgggga 120
 aagccatgtc cttctgggac tagagtctgc acatttaact atgggtgggtg ttgtgttttg 180
 tgcttagatg gtccttatca ttgccagta tggagatgtg ttggtgagaa atctgaggcg 240
 ggaagcagag acaggcaagc ctgtcacctt gaaagagtaa gtagaagcgc agccatgggg 300
 ttctgagctg tcatgaaccc ctccagcggc ctgccatgga gctgatattc ctgctgttgg 360
 gttattccag tgaccagac 379

<210> 153
 <211> 431
 <212> DNA
 <213> Homo sapiens

<400> 153
 cccagtgtac ctctgaattg cttttctatt cttttccctt agggatttga gggcttccact 60
 tagattttctc ttcattctaaa ctgtgatgcc ctacattgat ctgattttacc taaaatgtct 120
 ttctctctctc ttcagctctg tccgatctgg agctcgtggc ccaatcaatt atctttatctt 180
 ttgctggcta tgaaaccacg agcagtgttc tctccttcat tatgtatgaa ctggccactc 240
 accctgatgt ccagcagaaa ctgcaggagg aaattgatgc agttttaccc aataagggtga 300
 gtggatgata catggagaag gagggaggag gtgaaacctt agcaaaaatg cctcctcacc 360
 acttcccagg agaattttta taaaaagcat aatcactgat tctttcactg actctatgta 420
 ggaaggctct g 431

<210> 154
 <211> 574
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (110) .. (334)

<400> 154
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 aagttaattc aaaatctcaa tttatccaaa tctgtttcgt tctttccag gca cca ccc 118
 Ala Pro Pro
 1
 acc tat gat act gtg cta cag atg gag tat ctt gac atg gtg gtg aat 166
 Thr Tyr Asp Thr Val Leu Gln Met Glu Tyr Leu Asp Met Val Val Asn
 5 10 15
 gaa atg ctc aga tta ttc cca att gct atg aga ctt gag agg gtc tgc 214
 Glu Met Leu Arg Leu Phe Pro Ile Ala Met Arg Leu Glu Arg Val Cys
 20 25 30 35
 aaa aaa gat gtt gag atc aat ggg atg ttc att ccc aaa ggg gtg gtg 262
 Lys Lys Asp Val Glu Ile Asn Gly Met Phe Ile Pro Lys Gly Val Val
 40 45 50
 gtg atg att cca agc tat gct ctt cac cgt gac cca aag tac tgg aca 310
 Val Met Ile Pro Ser Tyr Ala Leu His Arg Asp Pro Lys Tyr Trp Thr
 55 60 65
 gag cct gag aag ttc ctc cct gaa aggtacaagg cccctgggaa gggagccctc 364
 Glu Pro Glu Lys Phe Leu Pro Glu
 70 75
 cctgaaccag cctgggttcaa gcatattctg cctctcttaa tctacaggac agtcatgtgg 424
 ttgtataatt atttgcttgt atttttatat ttagagattt ttttaatcat caaattgatt 484
 attgtcacac tttacaaacc atagactaga aaaaagaaaa ctacagtcac ccacaattcc 544

aacaacttac gatgaaggtc atcagttatg

574

<210> 155

<211> 75

<212> PRT

<213> Homo sapiens

<400> 155

Ala Pro Pro Thr Tyr Asp Thr Val Leu Gln Met Glu Tyr Leu Asp Met
1 5 10 15

Val Val Asn Glu Met Leu Arg Leu Phe Pro Ile Ala Met Arg Leu Glu
20 25 30

Arg Val Cys Lys Lys Asp Val Glu Ile Asn Gly Met Phe Ile Pro Lys
35 40 45

Gly Val Val Val Met Ile Pro Ser Tyr Ala Leu His Arg Asp Pro Lys
50 55 60

Tyr Trp Thr Glu Pro Glu Lys Phe Leu Pro Glu
65 70 75

<210> 156

<211> 574

<212> DNA

<213> Homo sapiens

<400> 156

cagtatgagt tagtctctgg agctcctaact acttcattag tactgcatgg actgagttaa 60
aagttaattc aaaatctcaa tttatccaaa tctgtttcgt tctttccagg caccaccac 120
ctatgatact gtgctacaga tggagtatct tgacatgggt gtgaatgaaa cactcagatt 180
attcccaatt gctatgagac ttgagaggggt ctgcaaaaaa gatgttgaga tcaatgggat 240
gttcattccc aaaggggtgg tggatgatgat tccaagctat gctcttcacc gtgacccaaa 300
gtactggaca gagcctgaga agttcctccc tgaaaggtac aaggcccctg ggaagggagc 360
cctccctgaa ccagcctgggt tcaagcatat tctgcctctc ttaatctaca ggacagtcac 420
gtggttgat aattatttgc ttgtattttt atatttagag atttttttaa tcatcaaatt 480
gattattgtc acactttaca aaccatagac tagaaaaaag aaaactacag tcatccacaa 540
ttccaacaac ttacgatgaa ggtcatcagt tatg 574

<210> 157

<211> 574

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (110) .. (334)

<400> 157

cagtatgagt tagtctctgg agctcctaact acttcattag tactgcatgg actgagttaa 60

aagttaattc aaaatctcaa tttatccaaa tctgtttcgt tctttccag gca cca ccc 118
Ala Pro Pro

acc tat gat act gtg cta cag atg gag tat ctt gac atg gtg gtg aat 166
 Thr Tyr Asp Thr Val Leu Gln Met Glu Tyr Leu Asp Met Val Val Asn
 5 10 15

gaa acg ctc aga tta ttc cca att gct atg aga ttt gag agg gtc tgc 214
 Glu Thr Leu Arg Leu Phe Pro Ile Ala Met Arg Phe Glu Arg Val Cys
 20 25 30 35

aaa aaa gat gtt gag atc aat ggg atg ttc att ccc aaa ggg gtg gtg 262
 Lys Lys Asp Val Glu Ile Asn Gly Met Phe Ile Pro Lys Gly Val Val
 40 45 50

gtg atg att cca agc tat gct ctt cac cgt gac cca aag tac tgg aca 310
 Val Met Ile Pro Ser Tyr Ala Leu His Arg Asp Pro Lys Tyr Trp Thr
 55 60 65

gag cct gag aag ttc ctc cct gaa aggtacaagg cccctgggaa gggagccctc 364
 Glu Pro Glu Lys Phe Leu Pro Glu
 70 75

cctgaaccag cctgggttcaa gcatattctg cctctcttaa tctacaggac agtcatgtgg 424

ttgtataatt atttgcttgt atttttatat ttagagattt ttttaatcat caaattgatt 484

attgtcacac tttaaaacc atagactaga aaaaagaaaa ctacagtcac ccacaattcc 544

aacaacttac gatgaaggtc atcagttatg 574

<210> 158

<211> 75

<212> PRT

<213> Homo sapiens

<400> 158

Ala Pro Pro Thr Tyr Asp Thr Val Leu Gln Met Glu Tyr Leu Asp Met
 1 5 10 15

Val Val Asn Glu Thr Leu Arg Leu Phe Pro Ile Ala Met Arg Phe Glu
 20 25 30

Arg Val Cys Lys Lys Asp Val Glu Ile Asn Gly Met Phe Ile Pro Lys
 35 40 45

Gly Val Val Val Met Ile Pro Ser Tyr Ala Leu His Arg Asp Pro Lys
 50 55 60

Tyr Trp Thr Glu Pro Glu Lys Phe Leu Pro Glu
 65 70 75

<210> 159

<211> 574

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (110)..(334)

<400> 159

cagtatgagt tagtctctgg agctcctaact atttcattag tactgcatgg actgagttaa 60

aagttaattc aaaatctcaa tttatccaaa tctgtttcgt tctttccag gca cca ccc 118

Ala Pro Pro

1

acc tat gat act gtg cta cag atg gag tat ctt gac atg gtg gtg aat 166

Thr Tyr Asp Thr Val Leu Gln Met Glu Tyr Leu Asp Met Val Val Asn

5

10

15

gaa acg ctc aga tta ttc cca att gct atg aga ctt gag agg gtc tgc 214

Glu Thr Leu Arg Leu Phe Pro Ile Ala Met Arg Leu Glu Arg Val Cys

20

25

30

35

aaa aaa gat gtt gag atc aat ggg atg ttc att ccc aaa ggg gtg gtg 262

Lys Lys Asp Val Glu Ile Asn Gly Met Phe Ile Pro Lys Gly Val Val

40

45

50

gtg atg att cca agc tat gct ctt cac cgt gac cca aag tac tgg aca 310

Val Met Ile Pro Ser Tyr Ala Leu His Arg Asp Pro Lys Tyr Trp Thr

55

60

65

gag cct gag aag ttc ctc ctt gaa aggtacaagg cccctgggaa gggagccctc 364

Glu Pro Glu Lys Phe Leu Leu Glu

70

75

cctgaaccag cctgggttcaa gcatattctg cctctcttaa tctacaggac agtcatgtgg 424

ttgtataatt atttgcttgt atttttatat ttagagattt ttttaatcat caaattgatt 484

attgtcacac tttacaaacc atagactaga aaaaagaaaa ctacagtcac ccacaattcc 544

aacaacttac gatgaaggtc atcagttatg 574

<210> 160

<211> 75

<212> PRT

<213> Homo sapiens

<400> 160

Ala Pro Pro Thr Tyr Asp Thr Val Leu Gln Met Glu Tyr Leu Asp Met

1

5

10

15

Val Val Asn Glu Thr Leu Arg Leu Phe Pro Ile Ala Met Arg Leu Glu

20

25

30

Arg Val Cys Lys Lys Asp Val Glu Ile Asn Gly Met Phe Ile Pro Lys

35

40

45

Gly Val Val Val Met Ile Pro Ser Tyr Ala Leu His Arg Asp Pro Lys

50

55

60

Tyr Trp Thr Glu Pro Glu Lys Phe Leu Leu Glu

65

70

75

<210> 161
 <211> 574
 <212> DNA
 <213> Homo sapiens

<400> 161
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 aagttaattc aaaatctcaa tttatccaaa tctgtttcgt tctttccagg caccacccac 120
 ctatgatact gtgctacaga tggagtatct tgacatgggt gtgaatgaaa cgctcagatt 180
 attcccaatt gctatgagac ttgagagggt ctgcaaaaaa gatgttgaga tcaatgggat 240
 gttcattccc aaaggggtgg tggatgatgat tccaagctat gctcttcacc gtgacccaaa 300
 gtactggaca gagcctgaga agttcctccc tgaaagggtac aaggctccctg ggaagggagc 360
 cctccctgaa ccagcctgggt tcaagcatat tctgcctctc ttaatctaca ggacagtcac 420
 gtggttggat aattatttgc ttgtattttt atatttagag atttttttta tcatcaaatt 480
 gattattgtc acactttaca aaccatagac tagaaaaaag aaaactacag tcatccacaa 540
 ttccaacaac ttacgatgaa ggtcatcagt tatg 574

<210> 162
 <211> 411
 <212> DNA
 <213> Homo sapiens

<400> 162
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 ggggtattat gtcattaact ttttaaaaaa ctaccaatgt ggaaccagat tcagcaagaa 120
 gaacaaggac aacatagatc cttacatata cacacccttt ggaagtggac ccagaaaactg 180
 cattggcatg aggtttgctc tcatgaacat gaaacttgct ctaatcagag tccttcagaa 240
 cttctccttc aaaccttgta aagaaacaca ggtagtcaa tttctataa aaataatgtt 300
 gtattaataa ttcttttaac tgagtgggtc gtatttttta aaaagaatat gcttggttaa 360
 tcttttacta atttgttctc tgggccaaag aatcaattag gcccatctgt g 411

<210> 163
 <211> 288
 <212> DNA
 <213> Homo sapiens

<400> 163
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 tatgcttggt taactgttgc agatccccct gaaattaagc ttaggaggac ttcttcaacc 120
 agaaaaaccc gttgttctaa aggttgagtc aagggatggc actgtaagtg gagcctgaat 180
 tttcctaagg acttctgctt tgctcttcaa gaaatctgtg cctgagaaca ccagagacct 240
 caaattactt tgtgaataga actctgaaat gaagatgggc ttcatcca 288

<210> 164
 <211> 288
 <212> DNA
 <213> Homo sapiens

<400> 164
 ggagtgtctc actcactttg atgctatact ttctactttt gtttatttaa tgcttctcaa 60
 tatgcttggt taactgttgc agatccccct gaaattaagc ttaggaggac ttcttcaacc 120
 agaaaaaccc gttgttctaa aggttgagtc aagggatggc accgtaagtg gagcctgaat 180
 tttcctaagg acttcggctt tgctcttcaa gaaatctgtg cctgagaaca ccagagacct 240

caaattacttt tgtgaataga actctgaaat gaagatgggc ttcattcca 288

<210> 165
 <211> 236
 <212> DNA
 <213> Homo sapiens

<220>
 <223> r=g or a

<400> 165
 ctacaacccat ggagacctcc acaactgatg taggacaaaa tgtttctgct ttgaactcta 60
 gccttttgggt ccagtgaggat ttatgaaaag tgccatctct atagctgagg atgaagaatg 120
 gaagagatta cratcattgc tgtctccaac cttcaccagt ggaaaactca aggaggatg 180
 aaaataacat gagttttaat aagaaactta aagaatgaat ctggtgggga caggta 236

<210> 166
 <211> 379
 <212> DNA
 <213> Homo sapiens

<220>
 <223> r=g or a, y=t or c, s=g or c, k=g or t

<400> 166
 ccctttccaa ggggtagtcc actgaatttg agctgcctaa aaatgggtctt ttatctttat 60
 gtacagaaaa cacatcacia aattcattat aaaatgtcac ttactgctcc atgctgggga 120
 aagccatgtc cttctgggac tagagtctgc acatttaact atgggtgggtg ttgtgttttg 180
 tgcttagatg gtccttatca ttgccagta tggagatgtg ttggtgagaa atctgaggcg 240
 ggaagcagag acaggcaagc ctrtcacett gaaasagtaa gtagaagcgc agcyatgggk 300
 ttctgagctg tcatgaaccc ctccagckgc ctgccatgga gctgatattc ctgctgttgg 360
 gttattccag tgaccagac 379

<210> 167
 <211> 431
 <212> DNA
 <213> Homo sapiens

<220>
 <223> r=g or a

<400> 167
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 tagatttctc ttcattctaaa ctgtgatgcc ctacattgat ctgatttacc taaaatgtct 120
 ttctctctct ttcagctctg tccgatctgg agctcgtggc ccaatcaatt atctttattt 180
 ttgctggcta tgaaaccacg agcagtgttc tctccttcac tatgtatgaa ctggccactc 240
 accctgatgt ccagcagaaa ctgcaggagg aaattgatgc agttttacc aataaggtga 300
 gtggatgrta catggagaag gagggaggag gtgaaacctt agcaaaaatg cctcctcacc 360
 acttcccagg agaattttta taaaaagcat aatcactgat tctttcactg actctatgta 420
 ggaaggctct g 431

<210> 168
 <211> 574
 <212> DNA
 <213> Homo sapiens

<220>

<223> y=t or c, r=g or a

<400> 168

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cagtatgagt tagtctctgg agctcctaact acttcattag tactgcatgg actgagttaa 60
aagtttaattc aaaatctcaa tttatccaaa tctgtttcgt tctttccagg caccacccac 120
ctatgatact gtgctacaga tggagtatct tgacatgggt gtgaatgaaa yrctcagatt 180
attcccaatt gctatgagay ttgagagggg ctgcaaaaaa gatgttgaga tcaatgggat 240
gttcattccc aaaggggtgg tggatgatgat tccaagctat gctcttcacc gtgacccaaa 300
gtactggaca gagcctgaga agttcctccy tgaaaggtac aaggyccctg ggaagggagc 360
cctccctgaa ccagcctggg tcaagcatat tctgcctctc ttaatctaca ggacagtcac 420
gtggttgat aattatttgc ttgtattttt atatttagag atttttttta tcatcaaat 480
gattattgtc acactttaca aaccatagac tagaaaaaag aaaactacag tcatccacaa 540
ttccaacaac ttacgatgaa ggtcatcagt tatg 574
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<210> 169

<211> 411

<212> DNA

<213> Homo sapiens

<220>

<223> y=t or c

<400> 169

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cctgtgtact actagttgag ggggtggcccc taagtaagaa accctaacat gtaactctta 60
gggggtattat gtcattaact ttttaaaaat ctaccaaygt ggaaccagat tcagcaagaa 120
gaacaaggac aacatagatc cttacatata cacacccttt ggaagtggac ccagaaactg 180
cattggcatg aggtttgtct tcatgaacat gaaacttgct ctaatcagag tccttcagaa 240
cttctccttc aaaccttgta aagaaacaca ggtagtcaa ttttctataa aaataatgtt 300
gtattaataa ttcttttaac tgagtgtct gtatttttta aaaagaatat gcttggttaa 360
tcttttacta atttgttctc tgggcccagg aatcaattag gccatctgt g 411
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<210> 170

<211> 288

<212> DNA

<213> Homo sapiens

<220>

<223> y=t or c, k=g or t

<400> 170

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ggagtgtctc actcactttg atgctatact ttctactttt gtttatttaa tgcttctcaa 60
tatgcttggt taactgttgc agatccccct gaaattaagc ttaggaggac ttcttcaacc 120
agaaaaaccc gttgttctaa aggttgagtc aagggatggc acygtaatg gagcctgaat 180
tttctaagg acttckgctt tgctcttcaa gaaatctgtg cctgagaaca ccagagacct 240
caaattactt tgtgaataga actctgaaat gaagatgggc ttcacca 288
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<210> 171

<211> 30

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(30)

<400> 171

cct gtc acc ttg aaa cac gtc ttt ggg gcc
 Pro Val Thr Leu Lys His Val Phe Gly Ala
 1 5 10

30

<210> 172

<211> 10

<212> PRT

<213> Homo sapiens

<400> 172

Pro Val Thr Leu Lys His Val Phe Gly Ala
 1 5 10